DOCUMENT RESUME

ED 099 095 JC 750 036

AUTHOR Dudgeon, Paul J.
TITLE An Instructional Systems Technology Model for Institutional Change.
INSTITUTION Canadore Coll., North Bay (Ontario).
PUB DATE Dec 74
NOTE 29p.; Figures 2A and 2B appended to the original documents are copyrighted and therefore not available. They are not included in the pagination

EDRS PRICE MF-$0.75 HC-$1.85 PLUS POSTAGE
DESCRIPTORS Change Agents; *Change Strategies; College Instruction; *Computer Oriented Programs; Educational Technology; Flow Charts; *Individualized Instruction; Instructional Innovation; *Instructional Technology; Junior Colleges; Models; Systems Analysis; *Systems Approach
IDENTIFIERS Computer Managed Instruction; *Language Optimizing Graphically Ordered Systems; LOGOS

ABSTRACT

A program based on instructional systems technology was developed at Canadore College as a means of devising the optimal learning experience for each individual student. The systems approach is used to solve educational problems through a process of analysis, synthesis, modeling, and simulation, based on the LOGOS (Language for Optimizing Graphically Ordered Systems) language and process of "anasynthesis" developed by Dr. Leonard Silvern. An added long range goal is quantification, whereby models can be used to answer questions regarding cost benefit, cost utility, and cost effectiveness. Computer Managed Instruction permits the educational technologist to utilize the computer in managing the complex information required in an individualized and personalized instructional program. Inputs to the system include such variables as pretests, posttests, criterion-referenced measurement, preferred modes of instruction, performance objectives, cognitive styles of program participants, tracking and evaluation of student progress, and measurement of retention. The process of change to such a program is discussed with relation to cost, strategy for change, use of computer systems, and the change agent. Flow charts depicting the program model are appended. (AH)

AN INSTRUCTIONAL SYSTEMS TECHNOLOGY MODEL FOR INSTITUTIONAL CHANGE

By: Paul J. Dudgeon
Dean, Continuing Education
Canadore College
North Bay, Ontario
Canada

CANADORE CONTINUING EDUCATION DIVISION STRATEGY

Our strategy to manage educational change in the Continuing Education Division at Canadore College has been to encourage an eclectic approach that mixes or blends the elements of the process of individualization and personalization. The final set or "mix" is decided upon to achieve the best or optimum mix of these elements for each student. This strategy recognizes that there is no one magic way to reach each student. We strive to account for each student, instructor, administrator and counsellor as an individual.

Our model has been based upon instructional systems technology.

WHAT IS INSTRUCTIONAL SYSTEMS TECHNOLOGY?

There are several definitions of instructional systems technology but one that highlights all of the essential features is provided by the commission on instructional technology:

> ...a systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication, and employing a combination of human and non-human resources to bring about more effective instruction.[1]

Many people tell me that they are either using a systems-model or that they are taking a systems-approach to instruction. Unfortunately, there is no evidence of this in practice, in many cases. To state definitions is not enough. A systems-approach demands that we analyze, synthesize, model and simulate. This

[1]"Six Characteristics in Search of a Profession, An Intellectual Technique" Howard B. Hitchens Jr. Audiovisual Instruction, November, 1971, pp. 101-102.

will become clear as we progress.

When we first individualized our programs in the fall of 1970 we constructed a simple model. Since we did not have a method or a precise "language" we simply drew some rectangles and described our process.[2] This was augmented by borrowing some of the items from the Oakland Community College model.[3] As we began to introduce other elements in the process, we simply drew a few more rectangles and added them to the chart.

I felt this was not adequate to represent our developments and decided that the LOGOS (Language for Optimizing Graphically Ordered Systems)[4] language and process of anasynthesis[5] developed by Dr. Leonard Silvern could possibly lead us to sophisticated models that could assist us to consider the complex relationships of the elements of individualizing and personalizing our programs. The more we individualized the more complex relationships became apparent.

I now feel that any attempt to individualize and personalize education programs should commence with the process of anasynthesis as developed by Dr. Silvern.

In order to effectively utilize anasynthesis, administrators, faculty and paraprofessionals must learn the process and the language.

2 See Canadore Continuing Education 1970 model for the Implementation and Management of Individualized and Personalized Programs, Figure I

3 See O.C.C. model, Figure 2A and 2B.

4 L.C. Silvern "LOGOS": A Systems Language for Flowchart Modeling, Educational Technology, June 1969.

5 Anasynthesis - the process of analysis, synthesis, modeling and simulation.

To accomplish this at Canadore, I asked Dr. Silvern to train the entire staff. This led to a team of persons who could implement the processes of anasynthesis in our division. I will now describe the model that we are building and the process that we are going through. It is essential that the graphic analog model excerpts should be referred to as I describe the model.[6] (It is an effort to understand, but the worth of the effort will be obvious to you.) Our division had been implementing a process of individualizing and personalizing for four years before we decided to build a sophisticated model and our first step involved a model of the current situation.

The Canadore Continuing Education Division Model for Innovative Individualized and Personalized Programs contains seven subsystems, and appears in the appendix of this article as Figure 3. The subsystems are:

1.0 Analyze Current Canadore Education Model
2.0 Identify Criteria
3.0 Evaluate Old Model
4.0 Design New Model
5.0 Run Simulations
6.0 Evaluate New Model
7.0 Implement New Model

In subsytem 1.0 we analyze the current Canadore CE model. The subsystem 1.0 contains two subsystems referred to as 1.1 and 1.2. (These numbers[7] serve as quick references to the user of the model.) In subsystem 1.1 we model the current functions and in 1.2 we analyze

[6] See Canadore Continuing Education Division model excerpts. A bibliography is also available from the author.

[7] Point numeric code

the model. Subsystem 1.1 contains three subsystems as seen in Figure 4. (Note: Each subsystem is given a specific number to accurately portray the sequence or flow of information from one subsystem to the next.)

1.1.1 Draw Model
1.1.2 Simulate Model to Test It
1.1.3 Evaluate Model 1:1 Correspond to Canadore Situation

In subsystem 1.1.1 we draw a model of the current functions at Canadore. This model represents a "snapshot picture" of the way our program is. It contains a description of all of the elements of individualizing and personalizing developed to date, as well as a complete look at all administrative, faculty and paraprofessional current functions. Our objective is to produce a model of present functions which has a 1:1 correlation with the actual program. In subsystem 1.1.2 we simulate (or tryout) the model to test it and in subsystem 1.1.3 we evaluate the model as to whether or not we have achieved a high "fidelity" (i.e. accuracy) with the real life situation. It is imperative that what actually exists is clearly identified before we progress.

In subsystem 1.2, Figure 4, we analyze the current model and the signal paths 1.2 to (follow the horizontal lines with arrow heads - these carry information from one subsystem to the following) 2.0 and 1.2 to 3.0 which indicate that the next step is to identify the criteria we will use to evaluate the old model. The results of our analysis of the current situation in 1.2 are fed forward (i.e. to be used later) to 3.0 where the current model will be evaluated. Examine Figure 3. Criteria for evaluation 2.0 are used in 3.0 to evaluate the old model

and are fed forward to 6.0 where they are stored as information to be utilized when the new model reaches the evaluation stage in 6.0.

Our goal is to analyze the existing situation 1.0 design a new model 4.0, run simulations to test this new model in 5.0 and implement the new model in 7.0.

Refer to Figure 5. The subsystem 1.1.1 Draw Model contains two subsystems

1.1.1.1 Conduct Project
1.1.1.2 Conduct BTSD (Basic Training for Skill Development - Adult basic education) Program

For two years we individualized and personalized our programs without the benefit of research or project assistance. We learned that to solve the problems that were occuring as we individualized we had to request additional funds. I asked the Research Section of the Ontario Ministry of Colleges and Universities for a grant of 70 thousand dollars to do a research and development project in the management and implementation of Individualized and Personalized programs.

The subsystem 1.1.1.1 represents the project and subsystem 1.1.1.2 represents the resulting BTSD Program.

At this point one should note the manner in which LOGOS (the language developed by Dr. Silvern) permits a simple start but allows for systematic progress to lower and lower levels of detail. We are, at this moment working at the fourth level of detail. (It is important that we become specific at each point in our analysis. The level of detail increases as we become more specific about the functions that have to be carried out at each point.)

The subsystem Conduct Project 1.1.1.1 shown in Figure 5 contains 10 subsystems:

1.1.1.1.1	Create New Ministry Proposal
1.1.1.1.2	Evaluate New Proposal Internally
1.1.1.1.3	Submit to Ministry
1.1.1.1.4	Request Clarification/Modification Proposal
1.1.1.1.5	Modify Proposal
1.1.1.1.6	Evaluate Proposal (Ministry)
1.1.1.1.7	Reject Proposal (Ministry)
1.1.1.1.8	Decide to Operationalize
1.1.1.1.9	Operationalize Project
1.1.1.1.10	Terminate Project

The subsystem 1.1.1.1 permits us to use a model to advantage in Project Work. Subsystem 1.1 1.8 indicates that some portions of the Project Work are so critical that we must find a way to operationalize them even if Ministry funding is not forthcoming. The subsystem 1.1.1.1.9 has four subsystems. The most important subsystem here is 1.1.1.1.9.3. This subsystem receives input from the feedforward signal path 1.1.1.1.6. The subsystem 1.1.1.1.9.3 is the key to the implementation phase of all Continuing Education Division Project Work and all Project results are, after evaluation in 1.1.1.1.9.3, fed forward and utilized in the subsystem 1.1.1.2.4 Operationalize BTSD Program. In similar fashion, all problems arising in the day to day operation of the BTSD program are fed back from 1.1.1.2.4 to 1.1.1.1.9.1 which integrates research and implementation and permits researcher and line manager to work together to solve mutual problems and to develop and implement new ideas and findings.

A long range goal of our modeling is quantification and I feel that we will be able to use these models (when mathematized) to answer questions regarding cost benefit, cost utility and cost effectiveness.

The subsystem 1.1.1.2 Conduct BTSD Program contains five subsystems:

1.1.1.2.1	Propose Individualized Program Days
1.1.1.2.2	Negotiate Proposal Ministry CMC College
1.1.1.2.3	Reject Proposal
1.1.1.2.4	Operationalize Program
1.1.1.2.5	End Semi-Annual Cycle

We propose a block of training days to the Ministry and CMC for a 6 month period in 1.1.1.2.1 negotiations occuring in 1.1.1.2.2 and we either operationalize the program 1.1.1.2.4 or the Proposal is rejected in 1.1.1.2.3. The subsystem shows feedback from 1.1.1.2.3 to 1.1.1.2.1; and from 1.1.1.2.4.4 to (1.1.1.2.4.3), (1.1.1.2.4.2), (1.1.1.2.4.1); and from 1.1.1.2.5 to 1.1.1.2.1; and from (1.1.1.1.2.4.4) to (1.1.1.1.9.1).

The Subsystem 1.1.1.2.4.3 Conduct Program is one of great interest to instructional technologists and curriculum personnel so we will look at its expansion in Figure 6.

Subsystem 1.1.1.2.4.3 contains several subsystems one of which is 1.1.1.2.4.3.1 Conduct Instruction. Subsystem 1.1.1.2.4.3.1 contains eight subsystems.

1.1.1.2.4.3.1.1	Conduct Orientation and Diagnosis
1.1.1.2.4.3.1.2	Place Student on the Program
1.1.1.2.4.3.1.3	Give Student Pre-tests
1.1.1.2.4.3.1.4	Prescribe Objectives and Resources
1.1.1.2.4.3.1.5	Study Objectives Using Resources
1.1.1.2.4.3.1.6	Give Students Post-Tests
1.1.1.2.4.3.1.7	Evaluate Performance
1.1.1.2.4.3.1.8	Graduate Student

I would like to point out that we are at this moment working with a model at the 8th level of detail. At this level of detail our view of instruction is still in gross overview format. This is an example of the use of models that are constructed systematically. By using

this system we will be able to systematically take each function to lower and lower levels of detail, or higher resolution, in a rigorous fashion. This permits us to gain an exact representation of instruction. Also, at the 8th level of detail the subsystem-Conduct Instruction is complex but with LOGOS as a tool, or means of representing, we do not fear this complexity and can press on to reach the level of exactness that we desire. We can also achieve the goal of considering the elements on individualizing and personalizing and their inter-relationships with high resolution and without finding a situation which is too complex for our system. Anasynthesis permits us to solve very complex instructional problems. Subsystem 1.1.1.2.4.3.1 Conduct Instruction represents a situation in which the total program is individualized and personalized. This subsystem at lower levels of detail contains the details of all of the elements and interrelationships referred to in "Arriving at Individualization and Personalization" (Dudgeon, 1973.) and "Innovative Approaches to Adult Basic Education" (Dudgeon, 1973, B.T.S.D. Review.) The model and LOGOS provided us with an opportunity to represent our elements and their interrelationships in a way that achieves a level of specificity in keeping with our use of objectives in education.[8]

We have progressed from a systems-approach that was "hopeful" to one that truly gives us the capacity for analysis, synthesis, modeling, and simulation. The process called "anasynthesis" provides the frame-

[8] Figure 7 shows subsystem 1.1.1.2.4.2 at a lower level of detail and is an example of the use of the summer function. See "Systems Engineering of Education XVIII: Roles of Feedback and Feedforward During Simulation" Leonard Silvern, ETC California 1974. Figure 8 is a graphic analog model used by Dudgeon at the 1974 National Educational Technology Conference in Miami, Florida to introduce beginners to the individualization and personalization of College ABE programs.

work and the system for our division. We have taken a systematic approach to solving education problems and have constructed a graphic analog model using LOGOS language to be sure that we are actually using the process of analysis, synthesis, modeling and simulation.[9]

A SET OF ELEMENTS

The process of individualizing and personalizing instruction is made up of large number of elements. Some of these isolated elements are: performance objectives, pre-tests, post-tests, criterion-referenced measurement, computerized data banks of objectives, items and resources, innovative architecture, The Educational Sciences including the cognitive styles of administrators, faculty, counsellors, and students, mediation by design rather than chance, computer-managed tracking, computer-managed evaluation, computer management of instruction, instructors utilized as resource persons, peer tutoring, paraprofessionals, a variety of hardware and software, diagnosis of learning problems, prescriptions, measurement of retention, the use of sampling technique in evaluation to introduce economy into testing, objectives written with attention to taxonomic levels, sequencing of content from the lowest to highest across levels, a balance between cognitive and affective objectives. (The list is long but not complete.) I have not listed these elements in the order implemented, but the list serves to prove that an instructional systems technology model for change contains a great many elements. These elements are all complex. (Consider the increase in complexity that occurs if I ask you to begin

[9]For a list of models available contact the author.

to consider the interrelationships of these elements.) The elements and interrelationships are complex and we need the process of "anasynthesis" to obtain solutions in complex systems.[10]

JARGON

At about this point many persons ask me if all of the "jargon" is necessary. I admit that educational technologists use a language that is foreign to many educators but it is a fact of life that this language is a necessity if one is to learn, communicate, research, or apply the young science of instructional technology or any other discipline. Each field has its language and I encourage you to learn this language if you wish to become more involved.

ELEMENTS AND INTERRELATIONSHIPS

In the Continuing Education Division at Canadore we combine the elements of individualization and personalization to meet the needs of each individual student. Each student has his own individual rate of learning and his own learning style.

WHICH IS BEST, LECTURE OR SEMINAR?

The answer is both. It depends on the student. Some students learn best by lectures and we provide good lecturers to fill this need. There is nothing more damaging than to place a student, who does poorly in a group, into a seminar where he will be expected to participate in order to pass. If a seminar experience is necessary for a student's chosen

[10] L.C.Silvern, Systems Engineering of Education I: The Evolution of Systems Thinking in Education, 1971 Education.

vocation, and if he does poorly in groups, then we should identify this prior to instruction and augment "his interactive-group abilities" before expecting him to attend and do well in a seminar. Many schools simply place this student in a seminar and leave him to sink or swim. There are many instructional methods: lecture, seminar, lecture-discussion, tutorial, peer-tutoring, independent study, CAI (Computer Assisted Instruction), programmed instruction, and others. Consider the problems when these modes are combined or interrelated with audio, visual, audio-visual, and all of the other varieties of presentation format. Consider the alternate media available for each television, radio, audio tape, video tape, theatre, sociodrama, film and real life field experiences.

CMI

Computer Managed Instruction (CMI)[11] permits College Managers to utilize the computer in managing the process of individualization and personalization. When programs are individualized a great deal of complex information must be available to managers to avoid chaos. Imagine a College where 10,000 students are each receiving instruction based upon their individual needs. In a situation like this, the computer can be used to provide in a sophisticated and economical way the management information needed. How can the Computer be used in the management of Individualized and Personalized programs? Most importantly, to provide a computerized data bank of objectives items and resources. It can further be used in the evaluation process. The step by step progress of large numbers of students can be easily

[11] Not Computer Assisted Instruction (CAI).

monitored. We can obtain pre-test, post-test and gather retention data without the armies of clerks usually associated with individualized learning. We can utilize concepts such as Domain-Referenced Achievement Testing utilizing both item and person sampling techniques. Matrix-sampling and the computer can greatly reduce both the frequency and cost of achievement testing. The computer can be used to give computer assistance to such difficult jobs as curriculum validation and analysis. In short, we probably have only begun to see the possible uses of the computer in the management of instruction and education programs.[12]

COGNITIVE STYLE

Concepts such as cognitive style have an almost infinite number of applications in individualized and personalized programs. Cognitive style has been developed by Dr. Joseph E. Hill based upon three assumptions about the human being:

1. Thought is different from language.
2. Man is a social creature with a unique capacity for deriving meaning from his environment and personal experiences through the creation of symbols.
3. Not content with biological satisfactions alone, man continually seeks meaning.

An individual's cognitive style is determined by the way he takes note of his total surroundings - how he seeks meaning, how he becomes informed. Is he a listener or a reader? Is he concerned only with his own viewpoint or is he influenced in decision-making by his family or associates? Does he reason as a mathematician, or as a social

[12] For further information about The Canadore Continuing Education Division, CAM (Comprehensive Achievement Monitoring) Computerized Evaluation System, and the Canadore Continuing Education Division Data Bank of Objectives, Items and Resources,contact the author.

scientist, or as an automotive mechanic?[13]

The committment of the Canadore Continuing Education Division is to determine the way in which a student learns, adapt instructional strategies to that style to guarantee successes, and to augment in a designed manner, the students lesser strengths or weaknesses. The seven educational sciences are:

1. Symbols and their meanings.
2. Cultural determinants of the meanings of symbols.
3. Modalities of inference.
4. Biochemical and electrophysiological aspects of memory
5. Cognitive styles of individuals
6. Teaching styles, administrative styles and counseling styles
7. Systemic analysis decision-making.

A STRATEGY FOR CHANGE

Change or changing always attempts to focus on the attainment of better learning outcomes and an attempt to reach each learner as an individual. One strategy for institutional change involves college managers who adopt, as policy, a committment to permit innovative personnel to develop and implement their ideas. Any good change agent will be ineffective if college policy or senior administrators block his way.

Administrators should encourage the eclectic selection of the elements

[13] The Hill conceptualization appears in Figure 2A and 2B

of instructional systems technology that will improve upon the efficiency in the management of learning. In this climate, administrators can hold all members of their organization responsible and accountable for student learning outcomes and the accurate measurement of learning.

DOES INSTITUTIONAL CHANGE COST?

Yes it may. Many colleges now have enough hardware for an individualized and personalized process but it may be either seldom or ineffectively used. Education tends to be a labor-intensive business and the re-deployment of resources based on education technology can lead to savings. Research and development has to be done and in the early stages this may negate cost savings but the end results will demonstrate trade-offs and pay-offs in cost savings. Development cost, like any other cost, should be amortized.[14]

ARRIVING AT INSTITUTIONAL CHANGE

At Canadore we have attempted institutional change using an instructional systems technology model. It has challenged many concepts of traditional educational management. Administrators, faculty and paraprofessionals in the Continuing Education Division, have changed and they support the implementation of new processes designed to increase learning outcomes. Administrators must set budget priorities to ensure the achievement of desired instructional outcomes.

[14] See: Gene L. Wilkinson, "Needed Information for Cost Analysis," Educational Technology, July, 1972.

THE ROLE OF THE EDUCATIONAL DEVELOPMENT OFFICER

The key to institutional change is the change agent. In an instructional systems technology model for institutional change, the Educational Development Officer (instructional systems technologist) can be a key change agent. Remember, also, that change agents can be trained.) Educational Development Officers can implement systems, and then support and train administrators, instructors, paraprofessionals, and students, during and after the implementation of these systems. An Educational Development Officer must be a trained instructional technologist and not just someone with an interest in the field. Too many administrators choose an Educational Development Officer who is not trained and inevitably find that the level of implementation and the frustration of faculty and students varies with the degree of expertise of the degree of expertise of the Educational Development Officer.

THE INSTRUCTIONAL MANAGER

The management of learning demands that instructors are instructional managers who design and manage the learning process. Computer systems (Both CMI and CAI) are available to assist the instructional manager in his role. Computers can collect and tabulate evaluation data and dispense information. The instructional manager brings professional judgment in the role of designer and manager of learning. The instructional manager is the diagnostician, the professional resource person, the prescriber of instructional material and the interpreter of evaluation data. Innovative approaches to the management of

instruction are an integral part of the process of institutional change in an instructional systems technology model.

WHERE WILL THE CHANGE MAKERS COME FROM?

We have changed and are continuing to change. We are concerned with the communication of educational innovation, and with innovation adoption and diffusion. We worry about where the instituitional change makers will come from. We need to concentrate on the training of instructional systems technologists who are trained to act as change agents in institutions who wish to use an instructional systems technology model for institutional change. Consider these key statements from the UNESCO Report "Learning to Be":

> Scientific and technical progress has three major consequences for education. We are now entitled to talk of a change in the learning process, which is tending to displace the teaching process. New theories of learning highlight the principle of contiguity and the importance of needs and motivations, of choice of content, of hierarchic nature of learning, the interrelationship between educational content and enironment, etc. Learning practices are affected at present by the disorderly and sometimes competing relations between the various vehicles for transmitting knowledge, hence the need for mult-media systems to co-ordinate their utilization and effectiveness.

The second major consequence of advances in educational technology, according to The UNESCO Report is:

> that it is impossible really to derive advantage from it without overhauling the entire educational edifice. The problem is not merely to modernize education from the outside, 'simply solving equipment problems, preparing programmes for using that equipment and inserting them into traditional pedagogic activities, but to make systematic use of available resources to develop a scientific awareness in the individual of methods of acquiring and using knowledge.'

> The aim is to avoid economic and financial wastage by co-ordinating those educational techniques which are at present available to us, as completely as possible. Educational technology is not just apparatus to be clamped on to a conventional system, adding to or multiplying traditional procedures. It can only be of value if it is really integrated into the entire system and if it leads us to rethink and renovate it.

The problem seems to be whether or not we can combine the concepts and techniques that are currently available to provide more effective instruction. Many institutions become dissatisfied with the process because they do not either: (1) utilize enough techniques to solve the problems and/or (2) seek ways to integrate and maximize the effect of the various concepts and techniques of the instructional technologist. Many researchers and implementers get immersed in one technique or the other and avoid the type of work and experimentation that integrates the concepts and techniques. Perhaps this is only due to the fact that instructional systems technology is a young area where most instructional systems technology experts are still too busy researching and developing new concepts to worry much about the integration of these concepts in practical implementations designed to gain maximum benefit for learners.

In closing, we can see that instructional systems technology can be an effective model for institutional change. Planned educational change based on an instructional systems technology model can focus us on the needs and goals of the individual learner.

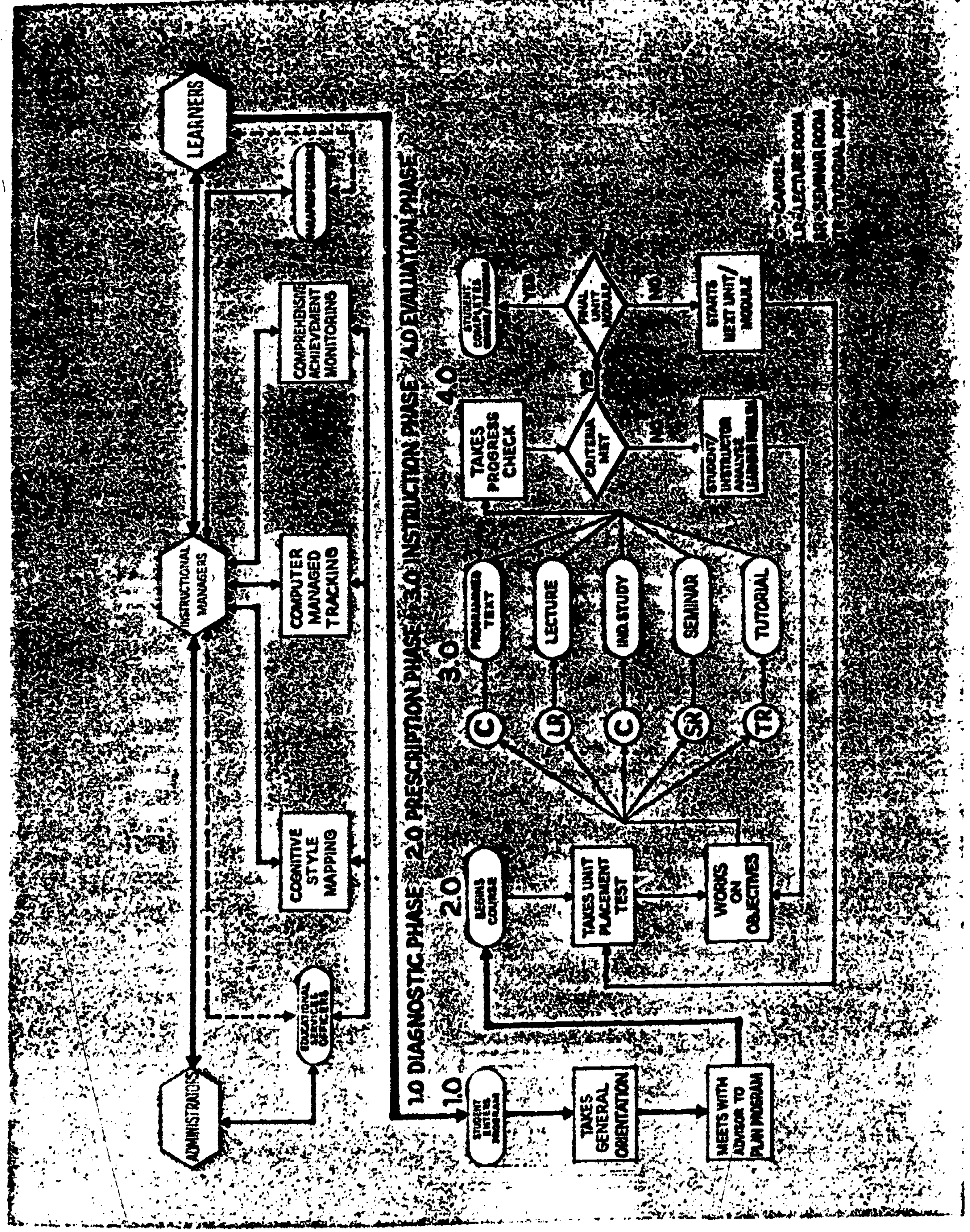

LEARNERS
INSTRUCTIONAL MANAGERS
ADMINISTRATORS
EDUCATIONAL SERVICES OFFICERS
COGNITIVE STYLE MAPPING
COMPUTER MANAGED TRACKING
COMPREHENSIVE ACHIEVEMENT MONITORING
1.0 DIAGNOSTIC PHASE 2.0 PRESCRIPTION PHASE 3.0 INSTRUCTION PHASE 4.0 EVALUATION PHASE
1.0
TAKES GENERAL ORIENTATION
MEETS WITH ADVISOR TO PLAN PROGRAM
2.0
BEGINS COURSE
TAKES UNIT PLACEMENT TEST
WORKS ON OBJECTIVES
C
LR
C
SR
TR
3.0
PROGRAMMED TEXT
LECTURE
IND. STUDY
SEMINAR
TUTORIAL
4.0
TAKES PROGRESS CHECK
CRITERIA MET
YES
NO
FINAL UNIT MODULE
YES
NO
STARTS NEXT UNIT/ MODULE

FIGURE 1

Figures
PAGE(S) 2A - 2B ~~WAS~~ (WERE) ~~MISSING~~ (REMOVED) FROM THIS DOCUMENT PRIOR TO ITS BEING SUBMITTED TO THE ERIC DOCUMENT REPRODUCTION SERVICE.

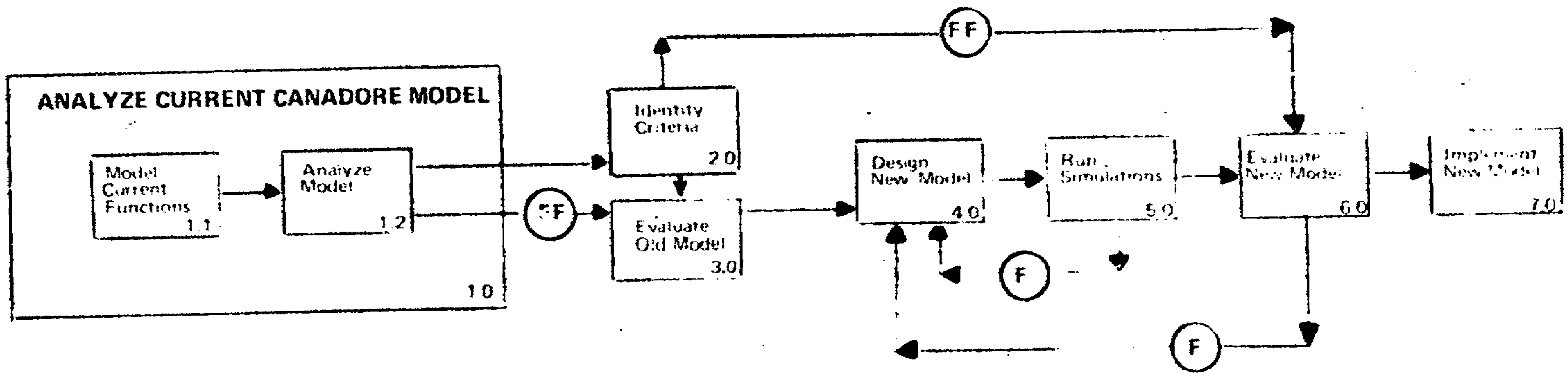

ANALYZE CURRENT CANADORE MODEL
Model Current Functions 1.1
Analyze Model 1.2
1.0
Identify Criteria 2.0
Evaluate Old Model 3.0
Design New Model 4.0
Run Simulations 5.0
Evaluate New Model 6.0
Implement New Model 7.0
FF
F
F

FIGURE 3

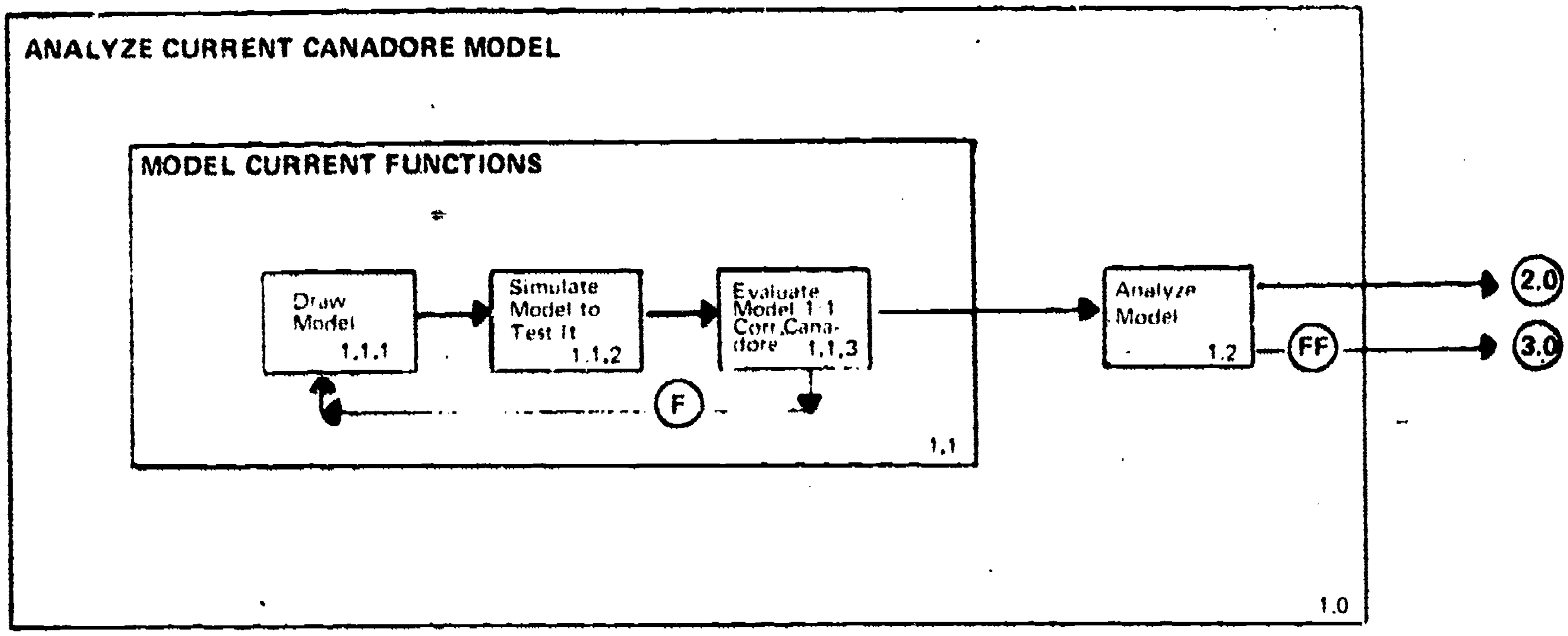
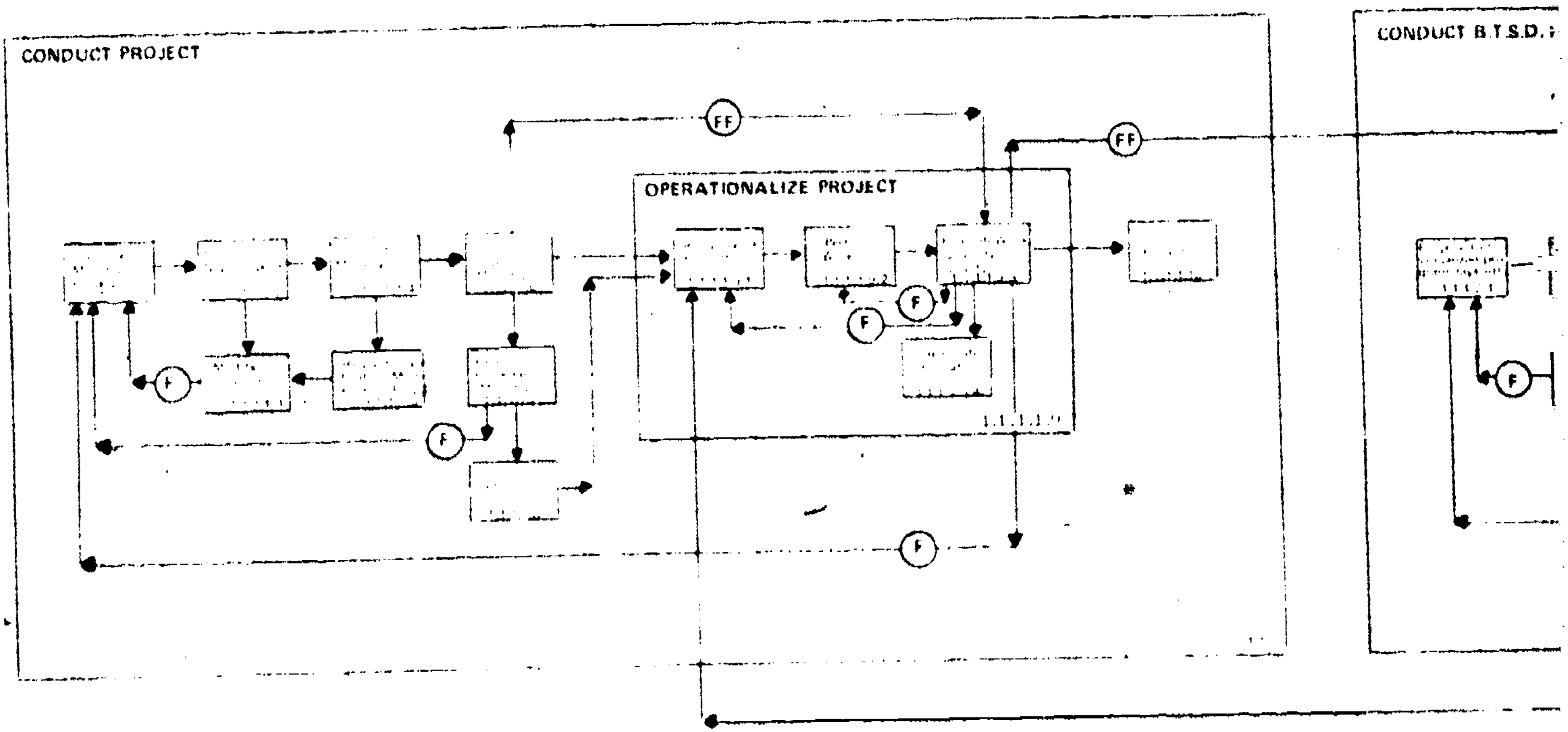

ANALYZE CURRENT CANADORE MODEL
MODEL CURRENT FUNCTIONS
Draw Model 1.1.1
Simulate Model to Test It 1.1.2
Evaluate Model 1:1 Corr.Canadore 1.1.3
F
1.1
Analyze Model 1.2
FF
2.0
3.0
1.0

FIGURE 4

BEST CO[illegible]BLE


CONDUCT PROJECT
OPERATIONALIZE PROJECT
CONDUCT B.T.S.D.
FF
FF
F
F
F
F
F
F

BEST COPY AVAILABLE

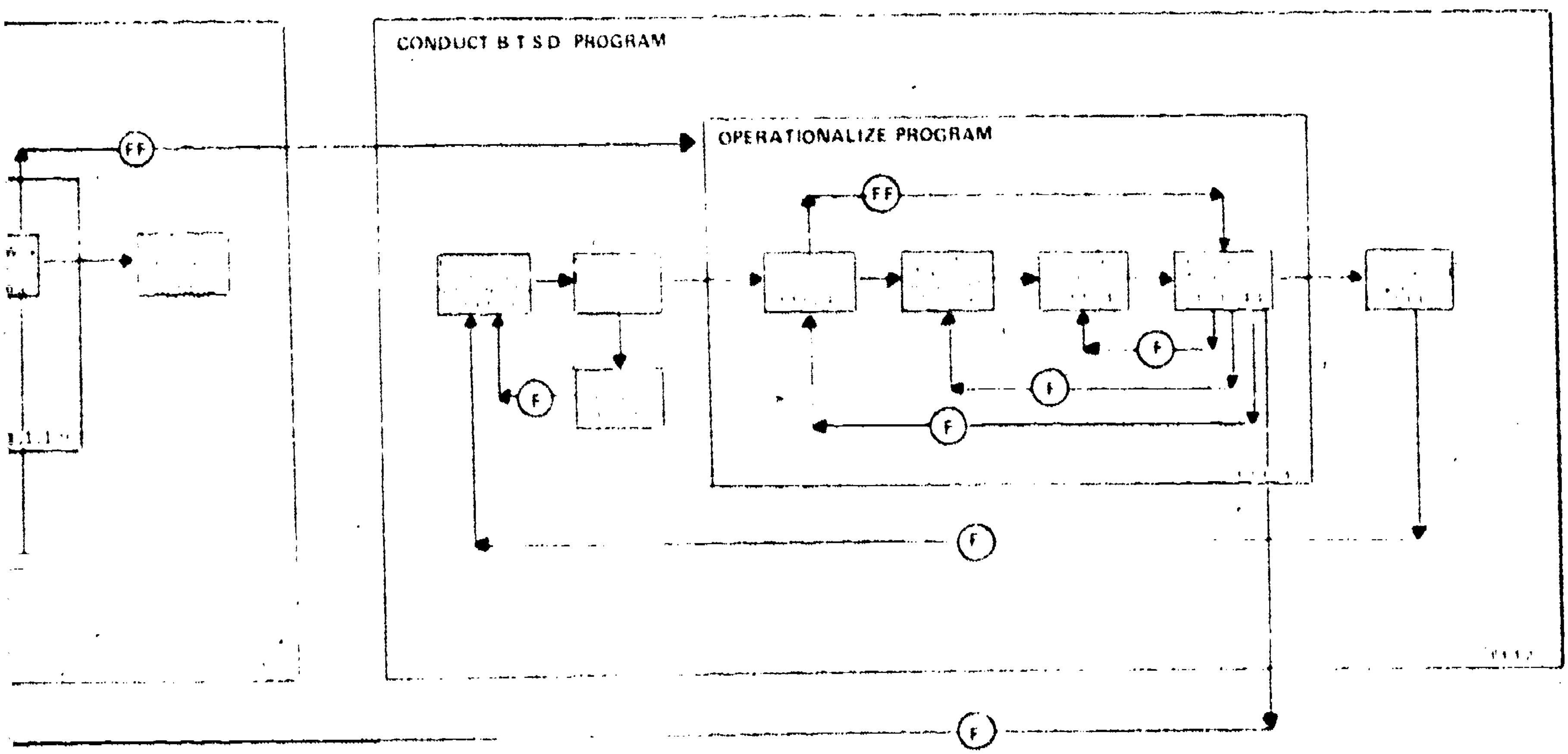


FIGURE 5

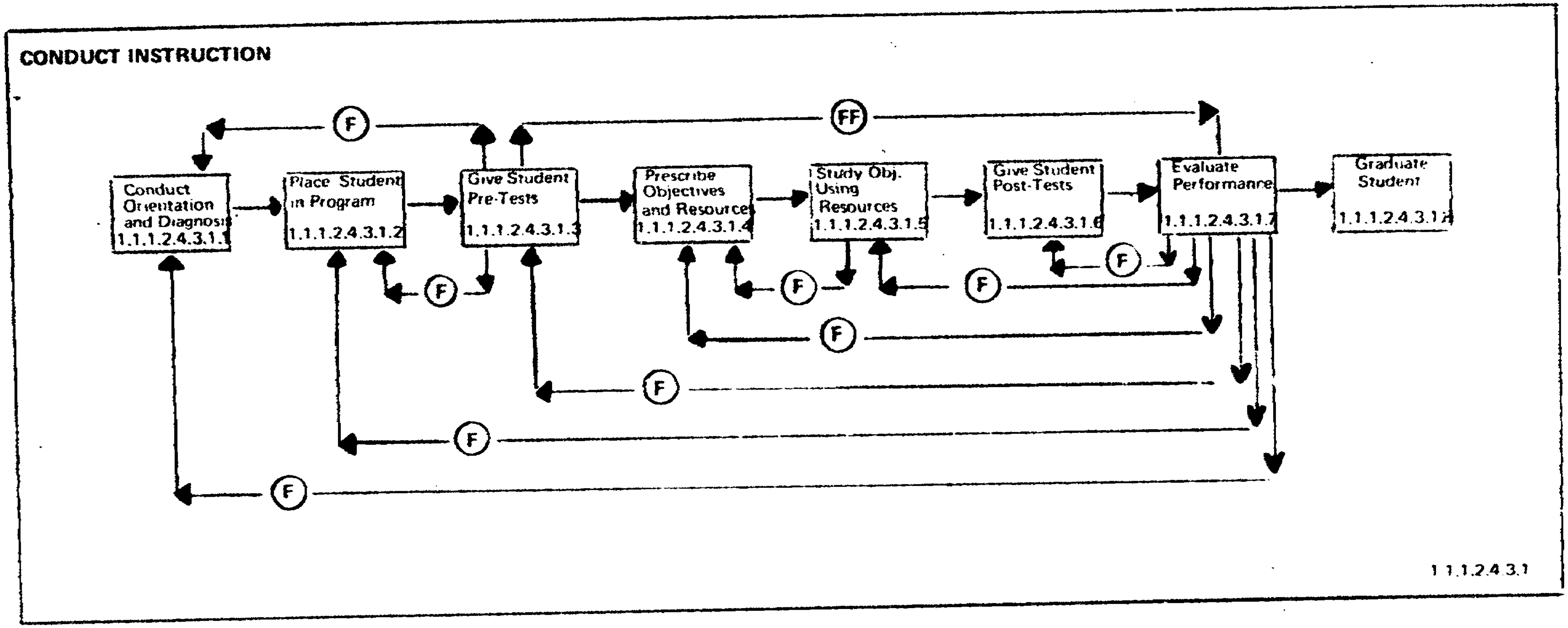
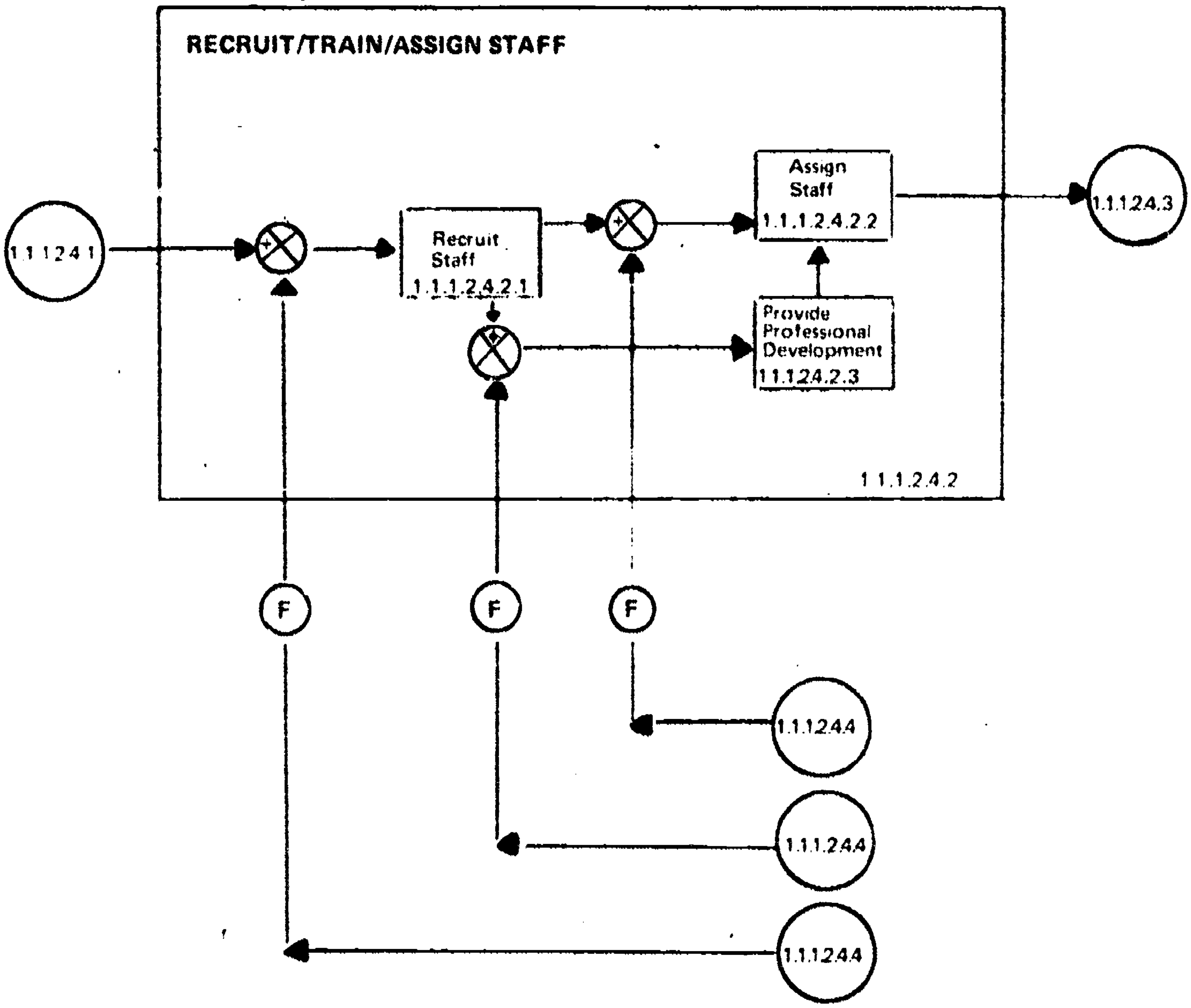
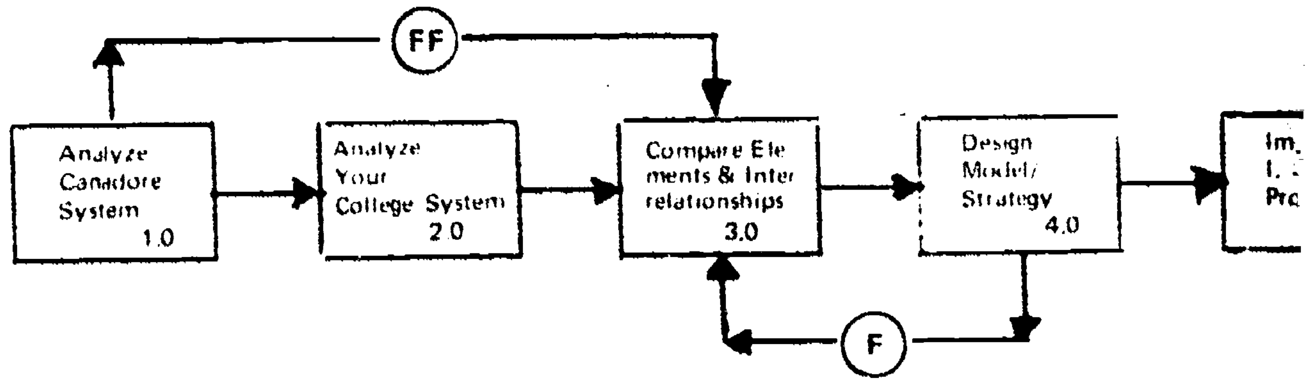

CONDUCT INSTRUCTION
Conduct Orientation and Diagnosis 1.1.1.2.4.3.1.1
Place Student in Program 1.1.1.2.4.3.1.2
Give Student Pre-Tests 1.1.1.2.4.3.1.3
Prescribe Objectives and Resources 1.1.1.2.4.3.1.4
Study Obj. Using Resources 1.1.1.2.4.3.1.5
Give Student Post-Tests 1.1.1.2.4.3.1.6
Evaluate Performance 1.1.1.2.4.3.1.7
Graduate Student
FF
F
1.1.1.2.4.3.1

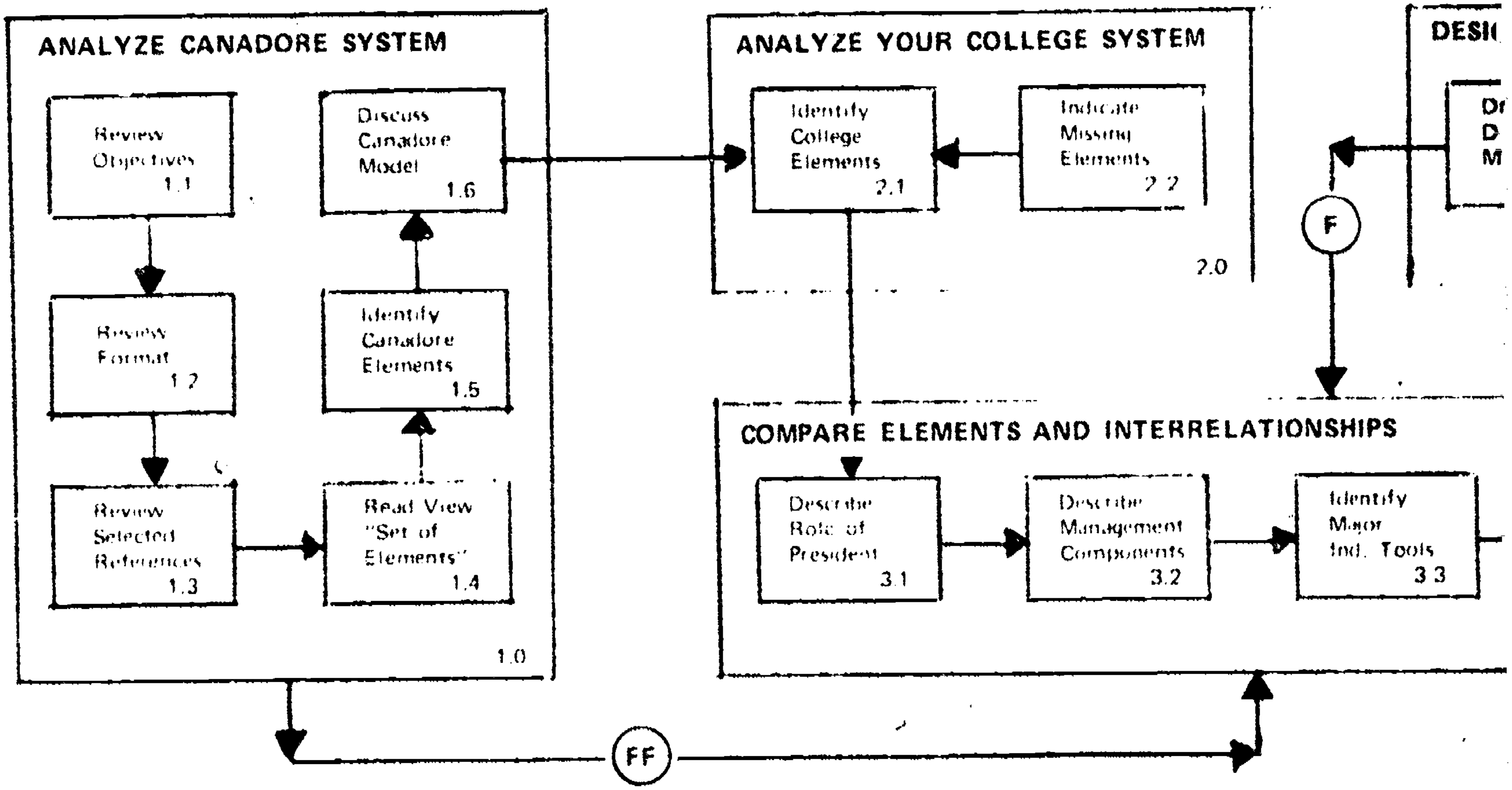
FIGURE 6

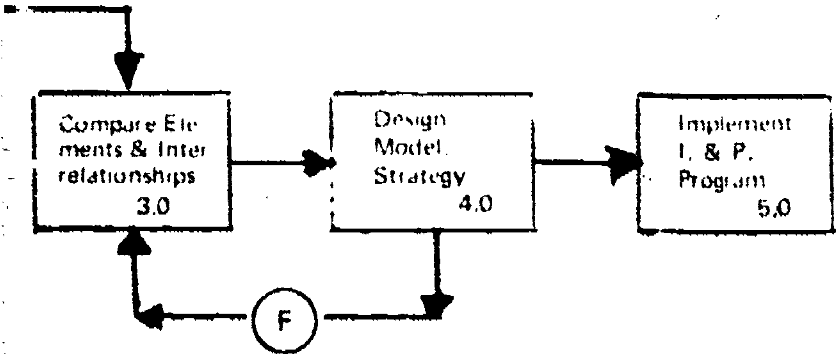


RECRUIT/TRAIN/ASSIGN STAFF
1.1.1.2.4.1
Recruit Staff 1.1.1.2.4.2.1
Assign Staff 1.1.1.2.4.2.2
Provide Professional Development 1.1.1.2.4.2.3
1.1.1.2.4.3
1.1.1.2.4.2
F
F
F
1.1.1.2.4.4
1.1.1.2.4.4
1.1.1.2.4.4

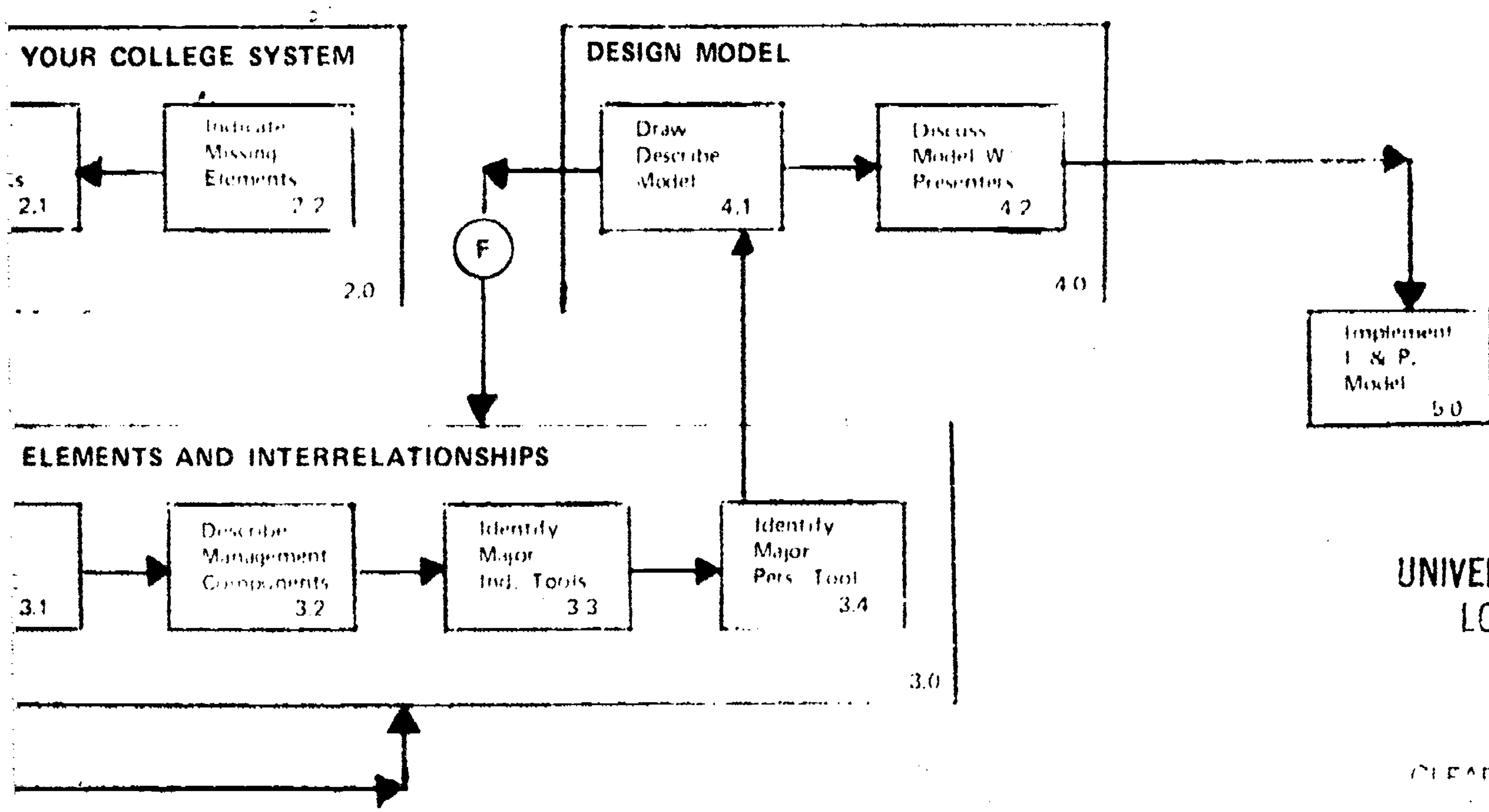
FIGURE 7


FF
Analyze Canadore System 1.0
Analyze Your College System 2.0
Compare Elements & Interrelationships 3.0
Design Model/ Strategy 4.0
F


ANALYZE CANADORE SYSTEM
Review Objectives 1.1
Review Format 1.2
Review Selected References 1.3
Read View "Set of Elements" 1.4
Identify Canadore Elements 1.5
Discuss Canadore Model 1.6
1.0
ANALYZE YOUR COLLEGE SYSTEM
Identify College Elements 2.1
Indicate Missing Elements 2.2
2.0
F
COMPARE ELEMENTS AND INTERRELATIONSHIPS
Describe Role of President 3.1
Describe Management Components 3.2
Identify Major Ind. Tools 3.3
FF



Compare Elements & Interrelationships 3.0
Design Model Strategy 4.0
Implement I. & P. Program 5.0
F



YOUR COLLEGE SYSTEM
2.1
Indicate Missing Elements 2.2
2.0
DESIGN MODEL
Draw Describe Model 4.1
Discuss Model W Presenters 4.2
4.0
F
Implement I. & P. Model 5.0
ELEMENTS AND INTERRELATIONSHIPS
3.1
Describe Management Components 3.2
Identify Major Ind. Tools 3.3
Identify Major Pers. Tool 3.4
3.0

FIGURE 8